E.a.R.L.2

Augmented Reality App Teaching Notes

Program E.a.R.L to explore new worlds with the Augmented Reality App

HOPE
is all you need

Top Tips:

- Make sure you code E.a.R.L to the correct square first before putting the number into the app so that you won't miss any AR.
- Check that your device is updated to either Android 10 or iOS 13 or above, as the app won't work on devices with lower or different software.
- E.a.R.L. 2 will be fully charged in less than 3 hours.
- Before each new step, press the pink cross to clear E.a.R.L's previous sequence so he's ready for a new input.
- Only some steps show AR. Look for the square icon on the challenge screen to know it's an AR step.

Adapting the Challenge:

- Town Mat: To make the challenges harder, face E.a.R.L away from the end destination when starting. Stick to the roads on the town mat for a harder challenge. To make it easier, take any path to reach the destination.
- Treasure Island Mat: Stay on flat areas avoiding going over mountains and volcanoes for a more difficult challenge. To make it easier, take any route you wish.

Treasure Island AR Elements:

- Pirate ship
- Whale
- Bridge
- Treasure chest

Town Mat AR Elements:

- Aeroplane
- Ice cream
- Dinosaur skeleton
- Dog

Can't see the AR Models?

If the AR is not popping up, ensure the mat is flat, well-lit, and not covered. Avoid glare from lights and windows. The mat should cover at least 25% of the camera space for AR to work. If tracking is lost, step back for the camera to see more of the mat.

National Curriculum

Here are the Computing National Curriculum objectives in England that E.a.R.L and the AR mats can help meet:

Key Stage 1 (Years 1 and 2):

- Use sequence, selection, and repetition in programs.
- Understand what algorithms are and how they are implemented as programs.
- Create and debug simple programs.

Key Stage 2 (Years 3 to 6):

- Design, write, and debug programs that accomplish specific goals.
- Use sequence, selection, and repetition in programs.
- Understand computer networks, including the Internet, and how they can provide multiple services.
- Use logical reasoning to predict the behaviour of simple programs.
- Use technology safely, respectfully, and responsibly.

E.a.R.L provides a hands-on coding and programming experience for students, allowing them to apply these computing concepts practically and engagingly. By programming E.a.R.L to navigate environments, solve challenges, and interact with different elements of the AR mat, students can develop their understanding of algorithms, sequencing, and debugging. They also gain experience using logical reasoning to predict and control the robot's behaviour. This can achieve cross-curricular objectives beyond computing, relating to Maths regarding Place Value and Coordinates and English with instructional writing.

Summary of Challenges with Answers:

Treasure Island

Challenge One - Discover New Species
Step 1
Start at the village then travel up to the right-hand side of the jungle.
Number range: 26–28, 36–38 & 46–48.

Step 2
Go through the jungle and then go down stopping just before the river.
Number range: 42-44 & 52–54.

Step 3
Cross the river and stop on the south-west corner of the island next to the whale.
Number range: 62, 72–74 & 83–84.

Challenge Three - Fix the Bridge
Step 1
Start in the village then go to the volcano.
Number range: 15, 24-26 & 34-37.

Step 2
Go to the bridge.
Number range: 17-19 & 27-29.

Challenge Two - Whale Rescue
Step 1
Start in the pool of water on the east side of the island, then go to the pirate ship.
Number range: 79, 80, 88-90 & 98-100.

Step 2
Go to the whale in the bottom left corner of the mat.
Number range: 81-83 & 91-94.

Challenge Four - Find the Hidden Treasure
Step 1
Start at the pirate ship, then go to the village.
Number range: 65-68, 74-78 & 86.

Step 2
Go to the map in a bottle.
Number range: 22, 31-33 & 42.

Step 3
Go through the jungle and over the bridge to the treasure chest.
Number range: 8-10, 18-20, 29-30

Challenge 5 - Back to the Ship
Step 1
Start at the treasure chest, go over the bridge and past the pool of water on the island's east side. Stop before the village.
Number range: 56–59.

Step 2
Go over the river, around the pool of water on the west of the island. Then go back east, stop before the village.
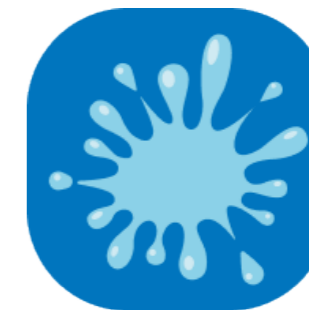Number range: 64, 73, 74 & 84 & 85.

Step 3
Go through the bottom of the village, then go to the pirate ship.
Number range: 79, 80, 88-90 & 98-100.

Free Play
Freely explore the mat with all of the AR elements showing. There are no steps in this challenge, the students can code E.a.R.L freely around the mat.

Challenge Six - Sea Exploration
Step 1
Start at the pirate ship, then go through the sea to the whale.
Number range: 81-83 & 91-94.

Step 2
Continuing in the sea, stop next to the message in a bottle.
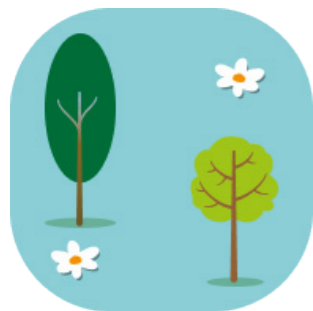Number range: 21, 22, 31, 32, 41 & 42.

Step 3
Continue in the sea, stop above the volcano.
Number range: 4-7 & 14-17.

A Trip to Town

Challenge One - Guided Tour
Step 1
Put E.a.R.L at the airport.
Number range: 16-20 & 26-28.

Step 2
Go to the museum.
Number range: 31, 32, 41, 42, 51, 52, 61 & 62.

Step 3
Go to the ice cream van.
Number range: 73, 74, 82–85, 93 & 94.

Step 4
Go to the beach.
Number range: 91-100.

Challenge Three - School Day
Step 1
Start at the house, then go to the museum.
Number range: 31-33, 41-43, 51-53, 61-63.

Step 2
Go to the school.
Number range: 58-60, 68-70 & 78-80.

Step 3
Go to the ice cream van.
Number range: 73, 74, 82–85, 93 & 94.

Challenge Two - Let's Buy Ice Cream
Step 1
Start at the house, then go to the bank.
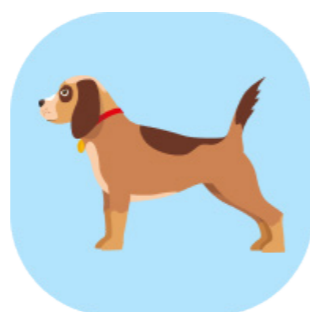Number range: 29, 30, 39, 40, 49 & 50.

Step 2
Go to the school.
Number range: 58-60, 68-70 & 78-80.

Step 3
Go to the ice cream van.
Number range: 73, 74, 82–85, 93 & 94.

Challenge Four - Dog Walk
Step 1
Start at the house, then go to the park with the swing.
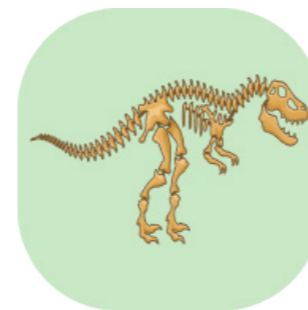Number range: 24, 34, 35, 44 & 45.

Step 2
Go to the other park with the bench.
Number range: 64-67 & 77.

Step 3
Go to the beach.
Number range: 91-100.

Challenge Five - School Trip
Step 1
Start at the school, then go to the beach.
Number range: 91-100.

Step 2
Go to the park with the bench.
Number range: 64-67 & 77.

Step 3
Go to the museum.
Number range: 31, 32, 41, 42, 51, 52, 61 & 62.

Free Play
Freely explore the mat with all of the AR elements showing. There are no steps in this challenge, the students can code E.a.R.L freely around the mat.

Challenge Six - Time to fly home
Step 1
Start at the beach, then go to the park with the bench.
Number range: 64-67 & 77.

Step 2
Go to the park with the swing.
Number range: 24, 34, 35, 44 & 45.

Step 3
Go to the airport.
Number range 16-20 & 26-28.

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